

ABSTRACT FINAL ID: H11K-01;

TITLE: Flood inundation mapping in the Logone floodplain from multi temporal Landsat ETM+ imagery (*Invited*)

SESSION TYPE: Oral;

SESSION TITLE: H11K. Remote Sensing Applications in Hydrology I

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ABSTRACT BODY:

Yearly flooding in the Logone floodplain makes an impact on agricultural, pastoral, and fishery systems in the Lake Chad Basin. Since the flooding extent and depth are highly variable, flood inundation mapping helps us make better use of water resources and prevent flood hazards in the Logone floodplain. The flood maps are generated from 33 multi temporal Landsat Enhanced Thematic Mapper Plus (ETM+) during three years 2006 to 2008. Flooded area is classified using a short-wave infrared band whereas open water is classified by Iterative Self-organizing Data Analysis (ISODATA) clustering. The maximum flooding extent in the study area increases up to ~5.8K km² in late October 2008. The study also provides strong correlation of the flooding extents with water height variations in both the floodplain and the river based on a second polynomial regression model. The water heights are from ENVISAT altimetry in the floodplain and gauge measurements in the river. Coefficients of determination between flooding extents and water height variations are greater than 0.91 with 4 to 36 days in phase lag. Floodwater drains back to the river and to the northeast during the recession period in December and January. The study supports understanding of the Logone floodplain dynamics in detail of spatial pattern and size of the flooding extent and assists the flood monitoring and prediction systems in the catchment.

KEYWORDS:

[1890] HYDROLOGY / Wetlands, [1821] HYDROLOGY / Floods, [1820] HYDROLOGY / Floodplain dynamics, [1855] HYDROLOGY / Remote sensing.

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